trates about an inch into the substance of the brain, and its walls are indurated in a marked manner. Over the posterior cornu of the left ventricle the cerebral tissue is softened in a moderate degree. The brain is rather anemic, the puncta vasculosa but few in number. At the base about two ounces of serum remains on the removal of the brain.

Heart flabby, weighs nine and a half ounces; the valves normal. Lungs, both were adherent to the costal pleuræ by ancient deposit of lymph; the adhesions being most extensive on the right side. At the summit of the left, numerous dormant sub-pleural tubercles are found. Emphysema of both lungs. Liver, the convex surface adherent to the adjacent peritoneum. Throughout its substance numerous deposits of tubercles exist; in some, the consistence is soft, in others, calcareous; the size varies from one and a half inches in diameter to that of a pea; in some of the largest, a depression on the surface indicates their presence; the sulcus over the largest deposit was three inches in length by two in depth. Weight of liver three pounds thirteen ounces. Spleen weighs sixteen ounces; beneath the capsule numerous flattened tubercles exist, and the whole substance of the organ is studded with minute tubercles.

Kidneys, the left weighs five ounces; the right four and three-quarter ounces; and in the latter a single tubercle is found.

ART. XI.—*Urinary Deposit of Epithelial Nuclei.* By JOHN BACON, Jr., M. D., Chemist and Microscopist of the Mass. General Hospital. [Read before the Boston Society for Medical Observation, February 2, 1852.]

THE presence of free epithelial nuclei in the complex urinary sediments attending those renal affections which are classed under the name of Bright's disease, is briefly noticed by several recent writers on the microscopic pathology of the kidney; but the occurrence of a distinct deposit composed of them has not, so far as I am aware, been described. In the early stage of a case of albuminuria, while the amount of albumen in the urine was very small, I have on two occasions observed sediments, which, under the microscope, consisted chiefly of spherical bodies, bearing a considerable resemblance to pus globules, and liable to be mistaken for them in a cursory examination.

These bodies are nearly or quite spherical; they vary little in size, the average diameter being $\frac{8}{1000}$ of a millimetre, or $\frac{1}{251}$ of an English inch. A few, which are granular on the surface, are as large as $\frac{1}{100}$ of a millimetre, or $\frac{1}{254}$ of an inch. Their surface is generally smooth, and they contain several (usually 8 or 10) large dark granules, with bright centres, but no nucleoli other than these. By transmitted light, they appear of a yellowish colour, and less transparent than pus globules, like which, they move freely in the fluid containing them, rolling over and over when it is agitated. Cold water, alcohol, and ether have no action upon them: in boiling water they

are more or less completely broken up. Neither acetic acid, nor dilute nitric or hydrochloric acids affect them.

A drop of acetic acid, added under the microscope, readily distinguishes them from pus globules, which it renders very transparent and finally dissolves, disclosing the contained nuclei, usually two or three in number. These nuclei are often visible in the globule without the aid of any reagent. Pus globules have a faint yellow tinge, appearing nearly colourless when seen singly. The surface is usually rough and granular. They are variable in size, and generally larger than the epithelial nuclei, averaging $\frac{1}{100}$ of a millimetre in diameter. The contained nuclei are about one-third as large as the globule: when single, the nucleus may reach half the size of the globule.

The deposit formed in the urine by the epithelial nuclei has some resemblance to a purulent sediment, but is darker and more readily diffused. In a strong light, it appears to the naked eye composed of innumerable brilliant points, which float freely in the fluid. In the first specimen examined, the nuclei were accompanied by a few pus globules, pavement epithelium cells, and exudation corpuscles. In the second specimen, four days later, a considerable deposit occurred, mainly composed of the spherical nuclei. Many similar nuclei were seen, inclosed in very transparent cells, scarcely larger than the nucleus. The free nuclei and the cells were often collected in groups and entangled in what appeared to be mucus. A few filmy membranous casts of the tubuli uriniferi, containing scattered nuclei, were observed; also pavement epithelium, and pus or mucous globules. Some of the epithelium cells appeared swollen and loaded with fat.

Each of these specimens of urine contained a very little albumen in solution, but more than the presence of a trace of pus would account for; and both deposited octohedra of oxalate of lime after standing some hours. Three weeks later, the urine of this patient was decidedly albuminous, and contained a considerable deposit, mainly composed of granular matter, often inclosed in fibrinous casts of the tubuli, or forming solid, opaque cylinders. There were also spherical nuclei, resembling those described above, but generally very granular and opaque; also, pavement epithelium and numerous oil globules. This sediment presents the characters common in albuminuria.

The tubuli of the kidney are lined in part by flat polygonal cells, forming a regular pavement epithelium, and partly by smaller cells, appearing as narrow transparent borders around their nuclei. These, which are at first spherical, gradually become flattened, a change of form usual in epithelium. Many nuclei occur, not inclosed in cells: they resemble so closely, in size and other characters, the spherical bodies found in the urine, that there is no reason to doubt their identity, especially as many nucleated cells were seen in one of the deposits, similar to the smaller ones which line the tubuli. The nuclei in the tubuli differ only in being more opaque and granular than those in the urine, which were probably thrown off in an immature state.

The spherical epithelial nuclei are probably of common occurrence (in small

numbers) in various urinary deposits: they might readily pass as pus globules, under the microscope, unless their abundance or other circumstances attracted particular attention to their distinctive characters.

ART. XII.—*Crystals of Hæmatoidin in the bloody fluid from a Tumour.* By JOHN BACON, Jr., M. D. [Read before the Boston Society for Medical Observation, May 3, 1852.]

IN old extravasations of blood, in the brain and other situations, it is not uncommon to find microscopic crystals, of a fine red colour, consisting of hæmatoidin, a modified form of hæmatin, the peculiar colouring matter of the blood. According to Virchow's observations, these crystals may be formed in from seventeen to twenty days after the occurrence of the extravasation. I am not aware that they have been seen in any recent effusion; but Kölliker observed the formation of crystals, which were probably hæmatoidin, within the blood corpuscles of some fishes.

In the bloody fluid obtained by puncturing a large cancerous tumour with an exploring needle, I have lately observed rhombic crystals, of a red colour, mixed with the cancerous elements, and with blood corpuscles, many of which were little or not at all altered. No coagula were seen in the fluid, which was submitted to the microscope about an hour after its removal from the tumour. It appeared to be simply a mixture of the cancerous juice with blood effused from cut vessels. The large proportion of cancerous juice probably hindered the coagulation of the blood.

The crystals seen in this fluid are rhombic tables, of a fine transparent crimson or ruby red colour, the thicker crystals being of course deeper in colour. Their edges are usually sharply defined, and the obtuse angles of the rhomb more or less rounded, giving them the most common form of the uric acid crystals deposited from urine. The largest tables measure about $\frac{1}{300}$ of an inch across the face, and considerably less than this in thickness.

In their microscopic characters, the crystals agree perfectly with those of hæmatoidin seen in old apoplectic effusions in the brain. Hæmatin has never been obtained in crystals. Hæmatoidin, which is doubtless derived from it, occurs in oblique rhombic prisms, and also amorphous; but has not been crystallized artificially. The crystals are usually tabular, and are liable to alter quickly. The chemical properties of these two bodies differ in some respects. No chemical reactions were obtained in this instance, and the evidence of the nature of the substance rests on microscopic characters alone. On re-examining the fluid some hours later, I was surprised to find that the crystals had entirely disappeared.